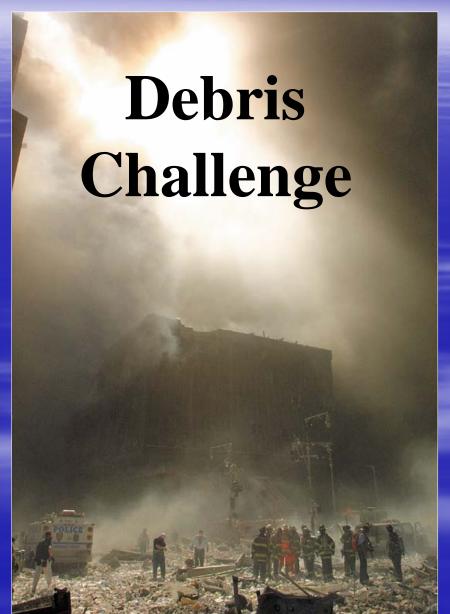


Catastrophic Event

- Agro-terrorism
- Biological attack
- Avian Influenza
- Earthquake
- Floods
- Forest Fire
- Pandemic Flu
- Radiological attack



Personal Readiness



Personal Readiness

- "Be part of the solution not part of the problem."
- Family secured be prepared at home, have a plan and supplies
- Are you Physically, Mentally and Spiritually Prepared?
- Report for duty:
 - "Go bag" / backpack prepared w/ 3-4 days "backpacking/camping" equip, food stuffs, energy snack bars, canteen, change of work clothes, walking shoes/work-boots, first aid kit, toiletries. small tool kit, work related equipment (GPS, camera, note pads, test kits, etc.)

Departmental Readiness



Departmental Readiness

- "Murphy's Law " What ever can go wrong probably will go wrong.
 - Plan on: communications failures,
 - transportation problems,
 - staffing problems,
 - sick/injured staff,
 - damaged facilities,
 - staff PPE inadequacies
 - equipment needs,
 - safety issues

Readiness Mind-set

- Disasters are not business as usual more intensified.
- -<u>Think outside the box!!</u> be a problem solver
 - Pre-Identified optional HQ locations
 - Shelters and locations health and waste issues
 - Contact lists / MOU's in place
 - Pre-drafted PSAs
 - Waste Disposal Issues:

Waste Processing and Disposal



Pre-Planning Considerations

- ID potential problem areas locations, potential waste stream, volume of debris, type of waste, risk factors, sensitive receptors – residential housing, business/ industry, bodies of water
- Conduct workshops with "players" e.g. Water Board, Air Board, Waste Board, OES, WMDs, Public Health, Corp of Engineers, USDA-APHIS Veterinarian, CDFA Veterinarian, Ag Commissioner, etc.
- Initiate development of "Play Book" (Action Plans)
- Involve local private industry partners

Pre-planning Considerations





- Pre-Selected Sites
- Approvals
- MOU's / Contact lists
- Equipment
- Safety
- Debris Removal Plans
- Haz-Mat
- Bio-hazardous Waste
- Volume Predictions
- Site locations
- Existing Capabilities
- Resources Required

ID Potential Disposal Issues (Pathogenic/ Bio-hazardous waste)



Pathogenic/Bio-hazardous Waste

Containment Critical – prevent spread of disease

Time Critical – decay, pathogenic reproduction, vector propagation

Pre-planning – Critical for time management

 Checklists – Critical for organization, focus, reduce confusion, time management

Identify High Risk Sites



ID Potential High Risk Sites

- I. ID Number, type and location of facilities which generate significant bio-hazardous/pathogenic debris field.
 - e.g. Concentrated Animal Feeding Operations (CAFOs) dairies, poultry farms, feedlots; medical waste generators, etc.
- Quantity of Animals / Volume of Bio-Hazardous and/or pathogenic waste material
- 3. ID "High risk" Sites Risk Assessment/ Hazard Analysis

ID Potential Disposal Volumes

e.g. Two Poultry Operations: w/ 1,000,000 laying hens, each:

= Approx. 2000 Tons / (3,158 cu. yds.)



Site, Puerto Rico Nov 98 Courtesy, Corp

= 20 -25 tons/ truck (depending on trailer size)

= 80-100 truck loads of <u>pathogenic</u> dead poultry/site

"uuggh....the smell... run!"



Disposal Methods

Primary Disposal Options:

- I. Solid Waste Landfills
- II. On-site burial (may not be practical)
- III. Chipping and Grinding / Composting
- IV. Incineration/Cremation
- v. Rendering (Animal mortalities)

I. Landfill Considerations



Landfill Considerations

- Number of Solid Waste Land Fills in your jurisdiction
- Capacity of landfills Permitted Daily Tonnages
- Average monthly peak tonnage / SLF
- Total average monthly tonnages (all SLFs)
- Remaining Capacity (depending on disaster impact capacity possibly overwhelmed)
- Pre-plan alternative disposal sites and handling methods

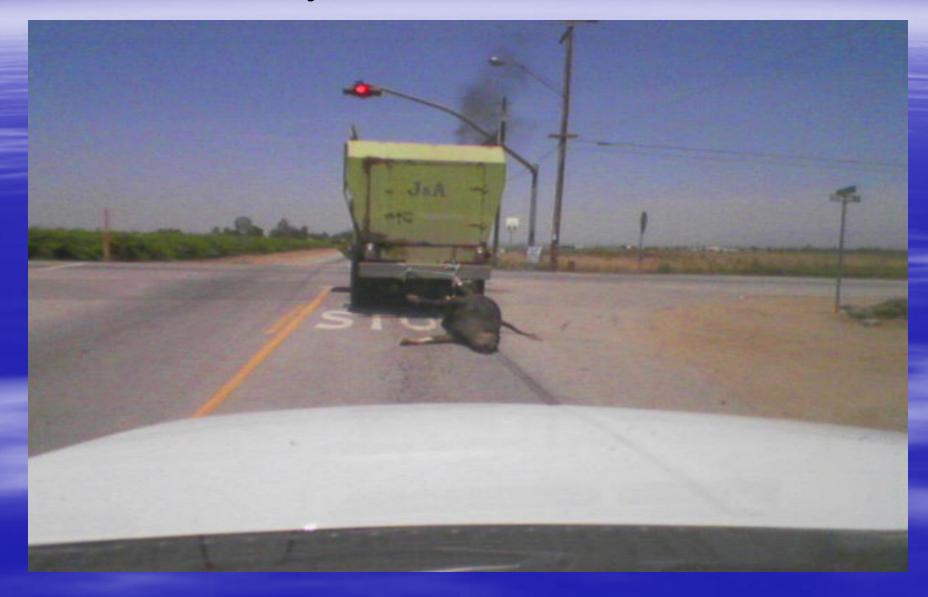
Landfill Considerations



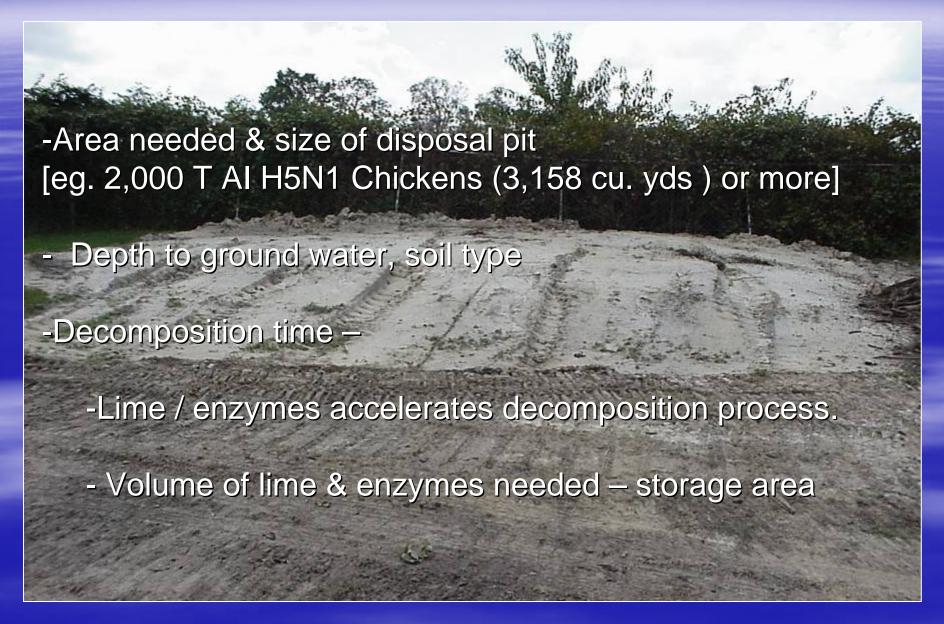
Landfill Considerations (Cont.)

- Space volume of bio- hazardous waste / other waste (eg. San Joaquin cattle die-off, summer 2006)
- -Transportation to SLF = cross contamination issues.
 - Environmental contamination along transportation routes
 - Cross contamination of additional equipment (Decon)
- -Multiple handling events = increased risk of exposures to workers and public.
- -Logistical changes to landfill operations
- -Labor intensive Training & PPE for labor
- Processes at site prior to transport to the SLF

Not the way to "haul" dead cattle...



Onsite Burial Considerations



III. Composting Considerations



Composting Considerations

- 1. Top 4 to 8 inches may not reach lethal temperatures for pathogen kill.
- 2. Space needed for composting [eg. 2,000 T (3,158 cu. yd) of pathogenic birds plus cover materials (6,000-7,000 cu. yds) --Space for approx. 8,000-9,000 cu.yds.]
- 3. <u>Vectors</u> Birds, wild animals, rodents and flies Compost piles act as environmental amplifiers for pathogens; H5N1 and other viruses. (eg. Dr. Alec Gerry's E.N.D. fly vector study. E.N.D. virus viable in gut of House Fly 4-5 days and *Fania Canicularis 8-9 days.*)

Composting Considerations

- 4. Human Error Factors (Murphy's Law)
 Common violations cited by EH Inspectors:
 - Failure to reach and maintain temperatures,
 - Lack of pathogen reduction
 - Failure to cover/ turn materials/ exposed animals
- 5. Ag Bag Specialized equipment (costs, extra handling H5N1 cross – contamination issues - DCON)
- 6. What will be the disposition of composted product?
 (Large volume on the market. Who will accept it?)

Humm...do you think they'll do it right in an Emergency ...??



IV. Incineration/Cremation Considerations

Emergency Declaration Conditions

"When there is no reasonable alternative, open air burning of disease-infected or exposed animals is exempt under California Law from open burning prohibitions and air pollution control district permitting requirements." (CAL/EPA)

Use of Air Curtain Destructor Technology

- Used in National Disasters (Hurricane clean-up)
- significantly reduces air emissions (minimizes smoke)
- Twenty to one reduction of waste volume
 (2 Types Trench and Above Ground Units)

Cremation Considerations (cont.)

- Air quality issues public perceptions
 (Air Curtain Destructor vs Open Burning)
- Site Location (distance from residential areas)
- Weather conditions

 (Humidity, moisture, barometric pressure, temperature wind direction and speed)
- Equipment use [type of ACD (Trench or Box), operator error, equipment function]

Air Curtain Destructor

"Clean" Frebox Burning as Massire Smoke Plane from Open Burning - Air Burners, LLC

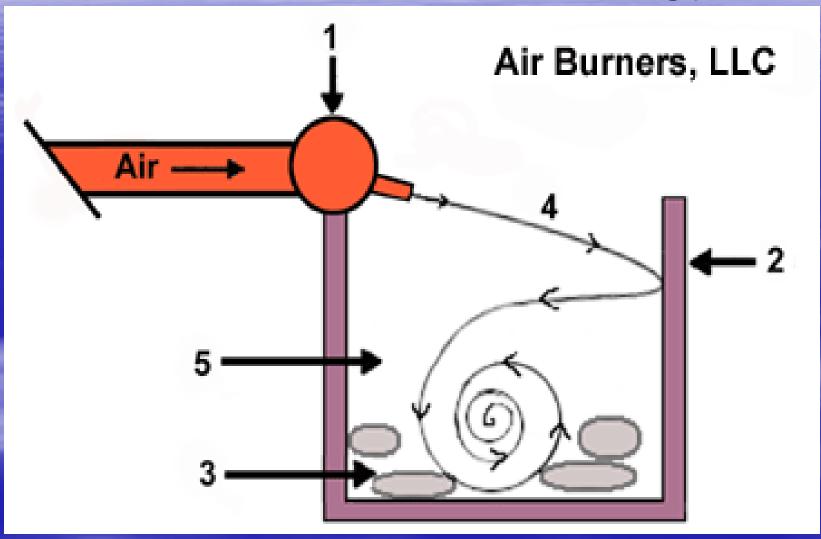
AIR BURNERS, LLC PHOTO GALLERY Air Curtain Burning (No Visible Smoke) versus Massive Amount of Smoke from Open Burning



Two S-327 in Full Operation at Hydro Dam Reservoir Waterborne Debris Cleanup Site in British Columbia, Canada

http://www.airbumers.com.Ab-L-ph-s327_rs_operbum_p.HI'M (1 of 2)11/29/2006 11:10:44 AM

Air Curtain Technology



Trench Type Air Curtain Destructor



Portable Above Ground ACD



Air Curtain Destructor Considerations

- a. Requires fuel source(s) to maintain hot fire: (2,000 +
 - Fuel Sources:
 - Local Co-gen, Waste Management landfills,
 - Tire Disposal Facilities
 - Fuel Types:
 - wood waste at landfills
 - Used tires
 - Orchards
 - Wood debris (One to one ratio)
- b. Diesel units available (fuel consumption / storage / cost)
- c. Five units permitted in California (Air Burners LLC)

Thank You

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Air Curtain Destructor Information

Mark Wingate, PE
Army Corp of Engineers
Emergency Management Section
San Francisco, CA

Air Burners LLC – (US Gov. - GSA Contract Holder)

1.-Norbert Fuhrmann

Palm City, Florida

2. -Cliff Suljak Phoenix, Az